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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,461	02/10/2004	Farid Matta	10030542-1	9134

7590 02/16/2006

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EXAMINER

STEIN, JAMES D

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/774,461		MATTA ET AL.	
	Examiner		Art Unit	
	James D. Stein		2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-11, 13, 16, 18-20, 22 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-11 is/are allowed.
- 6) ☒ Claim(s) 13, 16, 18, 19, 20, 22, and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the amendment filed on 12/05/05, which has been fully considered and entered. Claims 1-6, 8, 12, 14-15, 17, 21 and 23 are cancelled, and claims 10, 16, 18-20 and 22 are amended. Claims 9-11, 13, 16, 18-20, 22 and 24 are pending in the application.

Response to Arguments**Claims 13, 19 and 24**

Applicant has argued that the Kennedy reference of record is not a valid prior art reference because it is commonly assigned with the present invention and is a section 102(e)-type reference. This is not the case, as the Kennedy reference was published (pre-grant publication 2003/0185516) on 10/02/03, making it a section 102(a)-type reference. It is therefore a valid prior art reference in the rejection of claim 13.

Applicant has also argued that Kennedy does not teach a “position memory circuit” as claimed. This is not persuasive. Kennedy teaches that computer 6 determines optical alignment (col. 4 lines 57-65, col. 6 lines 17-29) of the device and stores the coordinates in memory location 7 (at least col. 7 lines 19-41) so that data about the alignment locations may be stored and processed later. Therefore, the rejections over Kennedy are maintained.

Method claim 24 claims the operation/functionality of the optical alignment device of Musk (see entire document) in view of Kennedy (adding position memory), and is clearly not patentably distinct from at least module claim 13.

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Claim 16

Applicant has argued that Pham does not teach “a means for holding the positioning device in position, wherein the means for holding comprises an adhesive a micro heater capable of activating the adhesive”. Pham teaches a heater 112 that heats a solder pool until molten (i.e. activated). The solder is then allowed to cool, thereby solidifying and holding the device in proper alignment positioning (at least ¶’s 0034, 0037, and 0043). It would have been obvious to one of ordinary skill in the art to include this feature in Musk because the solder is reflowable (see entire document), allowing the device to be re-aligned multiple times. It is noted that solder is an adhesive that is extremely well-known in the art.

Claim 18

Applicant’s arguments with respect to claim 18 are persuasive. The Maynard reference of record does not the RF-activated adhesive. However, in the disclosure applicant teaches RF-activated adhesive to be alternatively interchangeable with other securing means (UV-activated, infrared-activated, etc., page 11). This indicates that RF-activated adhesives are conventional adhesive options well known in the art. US PUB 2003/0063844 to Caracci et al. also confirms this. It would have been obvious at the time of the invention to an ordinarily skilled artisan to use any of the above known securing means based on its suitability for the intended application. Claims 18 and 23 are rejected below over the Musk reference of record and further in view of Caracci et al.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 20 is rejected under 35 U.S.C. 102(b) as being [USPUB 2002/0071638] to Musk, which discloses a related optical alignment device. At least fig. 1 of Musk shows an active optical component 40 (laser diode); an optical fiber 30 arranged with respect to the active optical component 40 to be capable of propagating light along an optical path between the active optical component 40 and the optical fiber 30 [¶0033]; a beam shaping optical component 212 (ball lens) located in the optical path 55 between the optical fiber 30 and the active optical component 40; and a positioning stage device 22 for moving the optical fiber 30 with respect to the active optical device 40 (see entire document, ¶'s 0001, 0031) in order to maximize coupling (i.e. optical alignment). It is noted that the fiber 30 is brought into alignment with respect to the light path (at least ¶0032), which means the fiber moves in first and second directions (“up” and “down” as shown in fig. 1) transverse with respect to the active component 40 and transverse to the optical path.

Furthermore, Musk suggests that the positioning device 22 should be a MEMS (micro-electrical mechanical [¶'s 0005, 0006, 0032]) device, or micro-machined movable device, as claimed by applicant. Additionally, Musk teaches the alignment between the fiber 30 and the active optical device 40 is optimized (maximized) [¶'s 0042, 0047, 0048, 0058], and holding one of the elements with respect to the other (i.e. means for holding the positioning device in position) after aligning [¶ 0036].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13, 19 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Musk and further in view of [USPAT 6,748,141/ US PUB 2003/0185516] to Kennedy et al. (“Kennedy”), which disclose related optical alignment devices. Fig. 3 of Musk shows an optical module 200 comprising:

an active optical component 40 (laser diode);

an optical fiber 30 arranged with respect to the active optical component 50 to be capable of propagating light 55 along an optical path between the active optical component 40 and the optical fiber 30 [¶0033];

a beam shaping optical component 212 (ball lens) located in the optical path 55 between the optical fiber 30 and the active optical component 40; and

a positioning stage device 22 for moving the optical fiber 30 with respect to the active optical device 40 (see entire document, [0031]);

a frame 20 to which the optical fiber 30 and active optical component 40 (via pad 60) are affixed.

Furthermore, Musk suggests that the positioning device 22 should be a MEMS (micro-electrical mechanical [¶’s 0005, 0006, 0032]) device, or micro-machined movable device, as

claimed by applicant. Additionally, Musk teaches the alignment between the fiber 30 and the active optical device 40 is optimized (maximized) [¶'s 0042, 0047, 0048, 0058], and holding one of the elements with respect to the other (i.e. means for holding the positioning device in position) after aligning [¶ 0036].

Therefore, Musk teaches the claimed invention except for said means to comprise a position memory circuit 3 operable to control the positioning device. Kennedy discloses a memory circuit 30 comprising at least computer 6 and memory location 7. The computer 6 determines optical alignment (col. 4 lines 57-65, col. 6 lines 17-29) of the device and stores the coordinates in memory location 7 (at least col. 7 lines 19-41) so that data about the alignment locations may be stored and processed or recalled later. Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art to include the position memory circuit of Kennedy in the optical alignment device of Musk so that data about the alignment locations may be stored and subsequently processed or recalled later.

It is noted that claim 24 claims the operation/functionality of the optical alignment device of Musk (see entire document) in view of Kennedy (adding position memory), and is clearly *not patentably distinct from at least module claim 13*. Claim 24 is therefore rejected on the same basis.

Claim 16 and is rejected under 35 U.S.C. 103(a) as being unpatentable over Musk and further in view of [USPUB 20040052468] to Pham et al. ("Pham"). Fig. 3 of Musk shows an optical module 200 comprising:

an active optical component 40 (laser diode);

an optical fiber 30 arranged with respect to the active optical component 50 to be capable of propagating light 55 along an optical path between the active optical component 40 and the optical fiber 30 [¶0033];

a beam shaping optical component 212 (ball lens) located in the optical path 55 between the optical fiber 30 and the active optical component 40; and

a positioning stage device 22 for moving the optical fiber 30 with respect to the active optical device 40 (see entire document, [0031]);

a frame 20 to which the optical fiber 30 and active optical component 40 (via pad 60) are affixed.

Furthermore, Musk suggests that the positioning device 22 should be a MEMS (micro-electrical mechanical [¶'s 0005, 0006, 0032]) device, or micro-machined movable device, as claimed by applicant. Additionally, Musk teaches the alignment between the fiber 30 and the active optical device 40 is optimized (maximized) [¶'s 0042, 0047, 0048, 0058], and holding one of the elements with respect to the other (i.e. means for holding the positioning device in position) after aligning [¶ 0036].

Therefore, Musk teaches the claimed invention except for the module to further comprise a micro-heater that melts solder in order to hold the positioning device 22 in position. Pham discloses a related optical alignment module comprising a micro heater 112 that melts solder to lock the optical device in alignment [0010], which would hold the optical elements in alignment in a more permanent and robust manner than taught by Musk. Furthermore, Pham teaches that heater 112 that heats a solder pool until molten (i.e. activated). The solder is then allowed to cool, thereby solidifying and holding the device in proper alignment positioning (at least ¶'s

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0034, 0037, and 0043). It would have been obvious to one of ordinary skill in the art to include this feature in Musk because the solder is reflowable (see entire document), allowing the device to be re-aligned multiple times with the device being held in alignment in a robust manner. It is noted that solder is an adhesive that is extremely well-known in the art.

Claims 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Musk and further in view of [USPUB 2003/0063844] to Caracci et al. ("Caracci"), which disclose an optical alignment device including RF activated adhesive (RF welding). Fig. 3 of Musk shows an optical module 200 comprising:

- an active optical component 40 (laser diode);

- an optical fiber 30 arranged with respect to the active optical component 50 to be capable of propagating light 55 along an optical path between the active optical component 40 and the optical fiber 30 [¶0033];

- a beam shaping optical component 212 (ball lens) located in the optical path 55 between the optical fiber 30 and the active optical component 40; and

- a positioning stage device 22 for moving the optical fiber 30 with respect to the active optical device 40 (see entire document, [0031]);

- a frame 20 to which the optical fiber 30 and active optical component 40 (via pad 60) are affixed.

Furthermore, Musk suggests that the positioning device 22 should be a MEMS (micro-electrical mechanical (¶'s 0005, 0006, 0032] device, or micro-machined movable device, as claimed by applicant. Additionally, Musk teaches the alignment between the fiber 30 and the active optical device 40 is optimized (maximized) (¶'s 0042, 0047, 0048, 0058), and holding one

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of the elements with respect to the other (i.e. means for holding the positioning device in position) after aligning [¶ 0036].

Therefore, Musk teaches the claimed invention except for said means for holding to comprise an RF-activated adhesive. Caracci teaches that such adhesives are well known in the optical art for securing optical elements in proper alignment (¶0031-0033). It would have been an obvious matter of design preference to use an RF-activated adhesive to secure the optical device of Musk in proper alignment it is well known and commonly used in the optical art for fastening optical elements in alignment. It has been held to be with ordinary skill of a worker in the art to choose a known material on the basis of its suitability for the intended use as a matter of obvious design choice (In re Leshin, 125 USPQ 192).

It is noted that claim 22 claims the functionality of Musk in view of Caracci, and is therefore not patentably distinct from claim 18. It is therefore rejected on the same basis.

Allowable Subject Matter

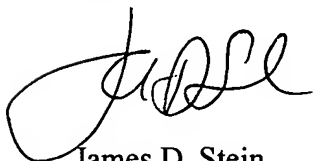
Claims 9-11 are allowed. None of the cited prior art discloses or suggests both a first and second micro-machined movable stage respectively affixed between: the frame and active optical component, and the frame and the beam-shaping optical component; and the frame and the active optical component, and the frame and the optical fiber. Such configurations would provide for additional optical alignment capability. One of ordinary skill in the art would not have found it obvious to or have been motivated to modify the device taught by Musk in order to achieve such configurations.

Conclusion

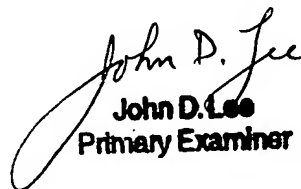
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Stein whose telephone number is (571) 272-2132. The examiner can normally be reached on M-F (8:00am-4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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John D. Lee
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